

DANISH ramazzini CENTRE

research in occupational
and environmental medicine

Annual
meeting

HOTEL SKANDERBORGHUS

PRESENTER:

Gitte Juel Holst, MSc.publ., PhD. student

Section of Environmental and Occupational Health

Department of Public Health, Aarhus University, Denmark



AARHUS UNIVERSITY



CISBO



ASTHMA, ALLERGY &
INDOOR ENVIRONMENT



Indoor dampness

Associations with allergy and respiratory health in Danish pupils



Collaboration between :



National Research Centre
for the Working Environment



Universiteit Utrecht

Background



Definition of indoor dampness

Any visible, measurable or perceived outcome of excess moisture that causes problems in buildings, such as mould, leaks or material degradation, mould odour or directly measured microbial growth or excess moisture.

Reference: the World Hospital Organization

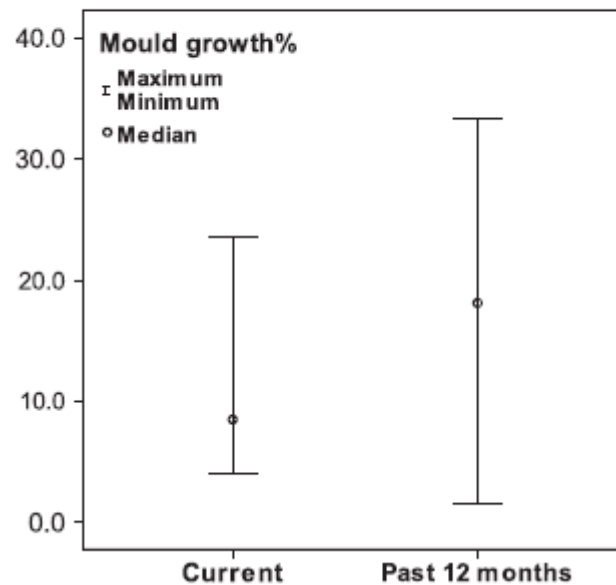


Background



Prevalence of indoor dampness

Dampness and mold in European housing stock
Haverinen-Shaughnessy



Reference:
Journal of Exposure Science and Environmental Epidemiology (2012) 22, 461–467

Background



Dampness-related health effects

- Immunological responses
- Symptoms
- Disease

Respiratory and Allergic Health Effects of Dampness, Mold, and Dampness-Related Agents: A Review of the Epidemiologic Evidence

Mark J. Mendell,^{1,2} Anna G. Mirer,³ Kerry Cheung,⁴ My Tong,¹ and Jeroen Douwes⁴

¹Indoor Air Quality Section, Environmental Health Laboratory Branch, California Department of Public Health, Sacramento, California; ²Environmental Energy Technologies Division, Lawrence Berkeley National Laboratory, University of California, Berkeley, California; ³Department of Population Health Sciences, University of Wisconsin School of Medicine and Public Health, Madison, Wisconsin; ⁴Research, Massey University, Wellington, New Zealand

Indoor Air 2004; 14: 243–257
<http://www.blackwellpublishing.com/ina>
Printed in Denmark. All rights reserved

Association between domestic mould and mould components, and asthma and allergy in children: a systematic review

C. Tischer*, C-M. Chen* and J. Heinrich*

Journal compilation © 2007 Blackwell Munksgaard
No claim to original US government works
INDOOR AIR
doi:10.1111/j.1600-0668.2007.00475.x

Dampness in buildings as a risk factor for health effects, EUROEXPO: a multidisciplinary review of the literature (1998–2000) on dampness and mite exposure in buildings and health effects

Abstract The scientific literature on health effects from dampness in buildings including mite exposure over the period 1998–2000 has been reviewed by the European group (EUROEXPO) of experts in the field.

Meta-analyses of the associations of respiratory health effects with dampness and mold in homes

Abstract The Institute of Medicine (IOM) of the National Academy of Sciences has conducted a systematic review of the scientific literature pertaining to the adverse health effects of mold in homes.

W. J. Fisk, Q. Lei-Gomez, M. J. Mendell

Environmental Energy Technologies Division, Indoor Air Quality Section, Lawrence Berkeley National Laboratory, University of California, Berkeley, California

Why investigate?



Knowledge gaps

- Few school studies
- Few Danish studies

Aim

To study allergy and respiratory health effects associated with indoor dampness in homes and schools of Danish pupils

Methods



Study population

417 pupils from 1st to 2nd grade:

- **21** classrooms
- **15** schools

NON-PARTICIPANTS

87 pupils declined

Participants:

- **330** pupils
- **21** classrooms



Exposure assessment



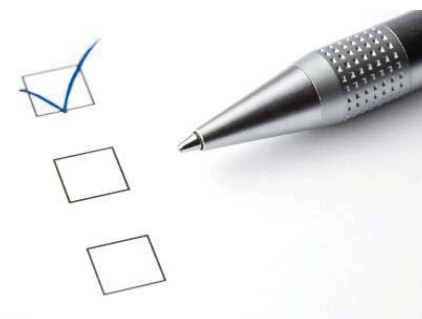
Technical inspection

- Classroom dampness
Low, medium or high degree



Physician administered questionnaire

- Bedroom dampness
Yes/no question
- Other indoor environmental characteristics:
Location of the dwelling, residential area,
number of occupants at school/at home,
pet keeping and second-hand smoking



Outcome assessment



Allergy

- Skin-prick-testing
- Self-reported atopic rhinitis and dermatitis



Respiratory health

- Lung function (z-scores of FEV_1 , FVC and FEV_1/FVC)
- Self-reported respiratory symptoms
- Self-reported doctor-diagnosed asthma

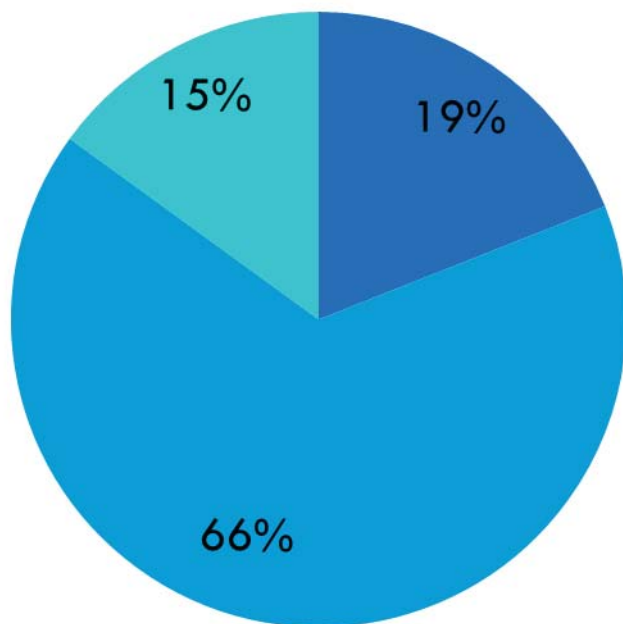


Results



Classroom dampness

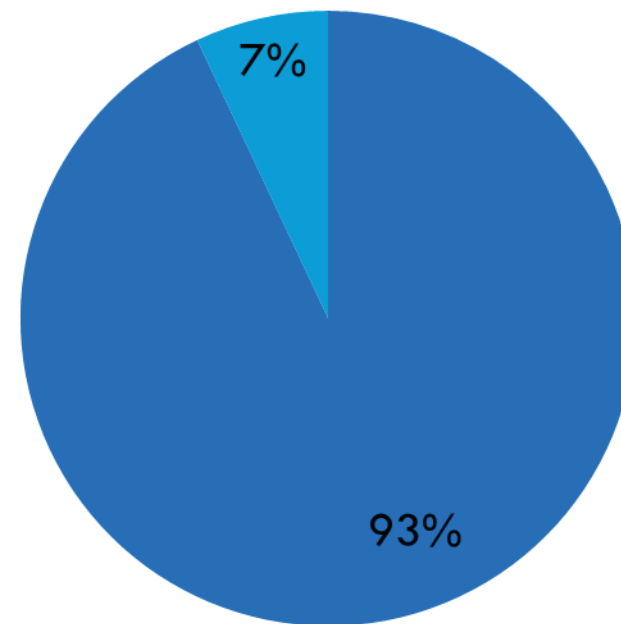
■ Low ■ Medium ■ High



n=21

Bedroom dampness

■ No ■ Yes

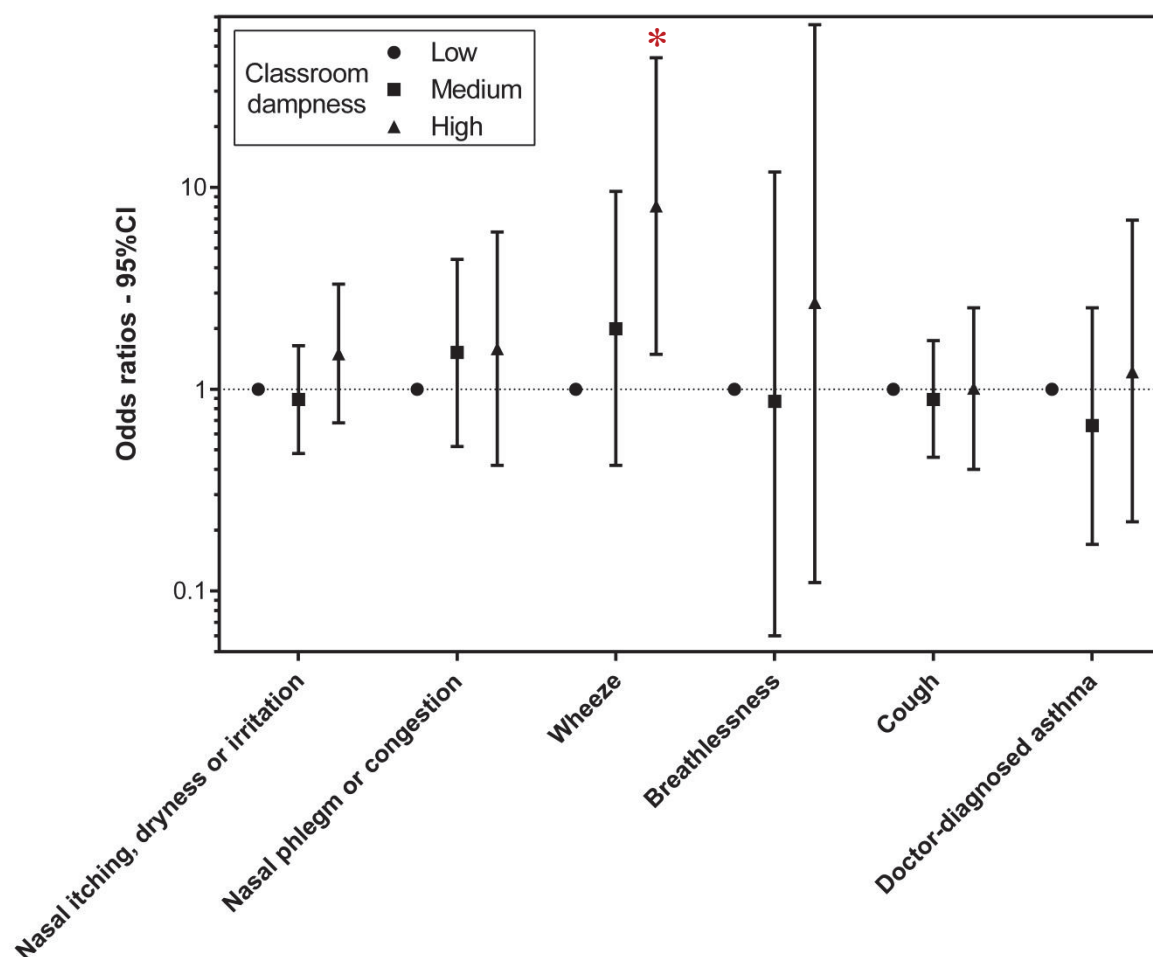


n=330

Dampness-related health effects



Respiratory symptoms and doctor-diagnosed asthma

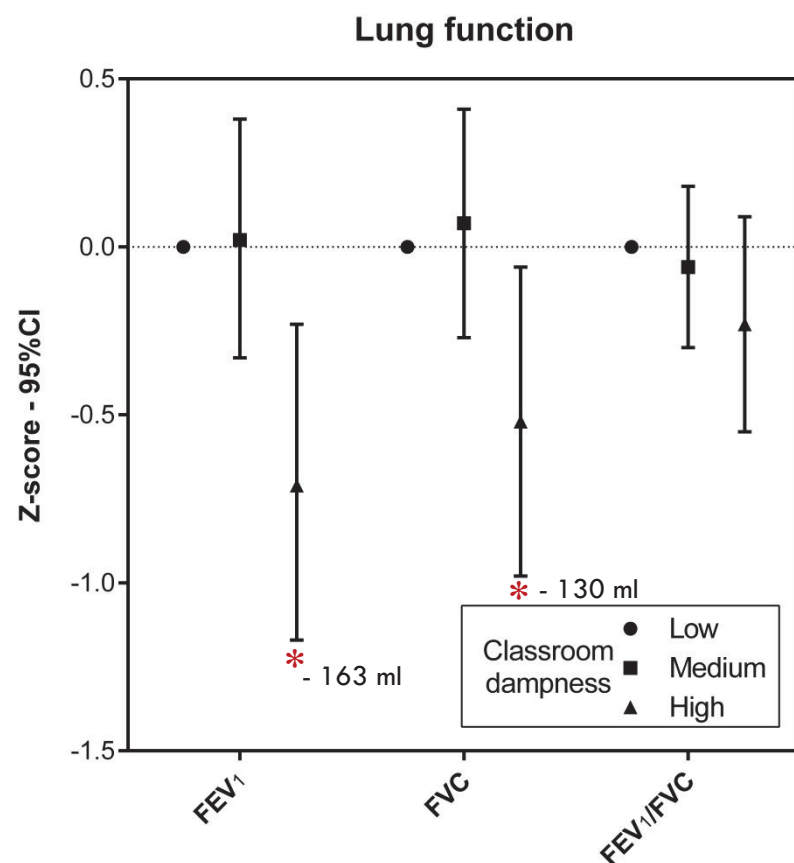


Adjusted for: gender, second-hand smoking at home, atopy, atopic disposition, and season

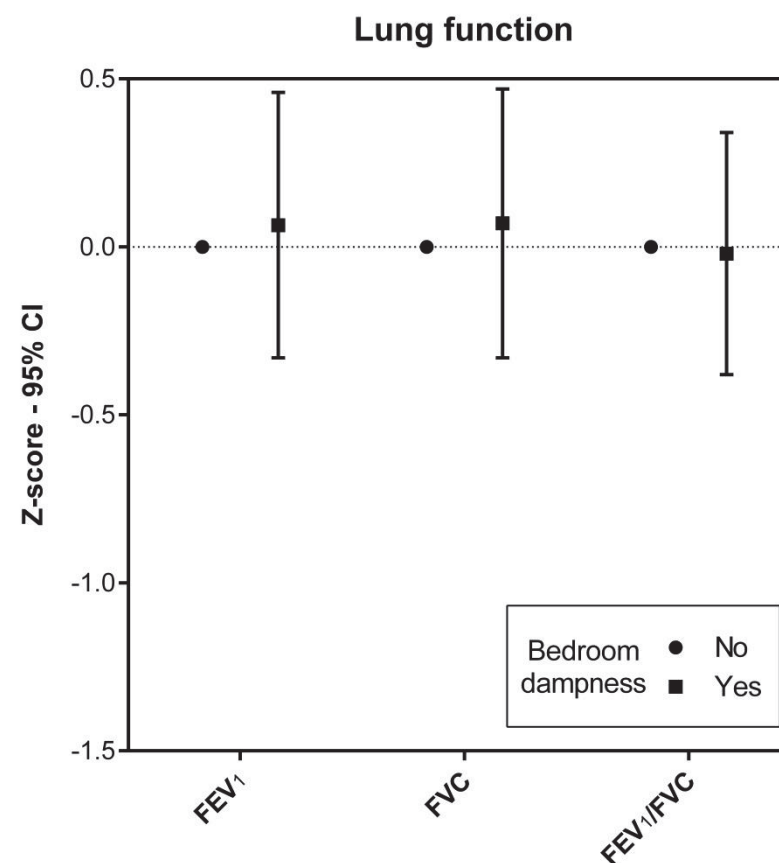
Dampness-related health effects



Classroom dampness



Self-reported bedroom dampness



Other indoor factors

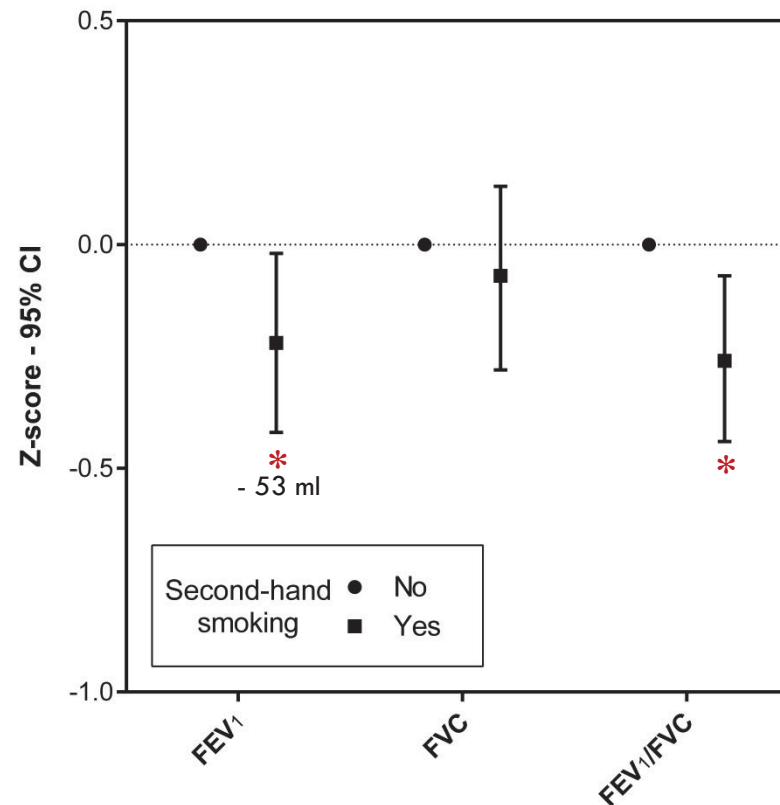


Other potential risk factors:

Pet keeping, urbanisation, location of the home, crowding at home, number of pupils in the classroom, air quality parameters (temperature, RH and CO₂), and second-hand smoking

Second-hand smoking

Lung function



Discussion



Strength of our study and results

Advantages:

- Consistent with previous study findings
- Subjective and objective health assessment
- Technician determined classroom dampness

Limitations:

- Cross-sectional design
- Small population
- No knowledge on underlying mechanisms
- Self-reported bedroom dampness and second-hand smoking

Conclusion



Second-hand smoking and dampness may have adverse effects on children's respiratory health and should therefore be prevented by remediation or avoidance



Thank you for listening

